BREAKING ADVANCES

6377 Highlights from Recent Cancer Literature

REVIEWS

6379 Decoding the Histone Code: Role of H3K36me3 in Mismatch Repair and Implications for Cancer Susceptibility and Therapy
Guo-Min Li

6384 Real-time Liquid Biopsy in Cancer Patients: Fact or Fiction?
Klaus Pantel and Catherine Alex-Panabieres

MEETING REPORT

6389 The Hippo Tumor Suppressor Network: From Organ Size Control to Stem Cells and Cancer
Georg Halder and Fernando D. Camargo

PRIORITY REPORT

6393 Erythropoietin Activates Cell Survival Pathways in Breast Cancer Stem-like Cells to Protect Them from Chemotherapy
Matilde Todaro, Alice Turdo, Monica Bartucci, Flora Iovino, Rosanna Dattilo, Marco Biffoni, Giorgio Stassi, Giulia Federici, Ruggero De Maria, and Ann Zeuner

INTEGRATED SYSTEMS AND TECHNOLOGIES

6401 A Transcriptional and Metabolic Signature of Primary Aneuploidy Is Present in Chromosomally Unstable Cancer Cells and Informs Clinical Prognosis
Jason M. Sheltzer

MICROENVIRONMENT AND IMMUNOLOGY

6413 GM-CSF Promotes the Immunosuppressive Activity of Glioma-Infiltrating Myeloid Cells through Interleukin-1 Receptor-α
Gary Kohanbash, Kayla McKaveney, Masashi Sakaki, Ryo Ueda, Arlan H. Mintz, Nduka Amankulor, Mitsugu Fujita, John R. Ohlifest, and Hideho Okada

Precis: These findings reveal the operation of immunosuppressive mechanisms in the glioblastoma microenvironment driven by GM-CSF, a factor used in the clinic to elevate white blood cell counts in patients, suggesting clinical risks arising from its use.

6424 Substance P Autocrine Signaling Contributes to Persistent HER2 Activation That Drives Malignant Progression and Drug Resistance in Breast Cancer
Susana Garcia-Recio, Gemma Fuster, Patricia Fernandez-Nogueira, Eva M. Pastor-Arroyo, So Yeon Park, Cristina Mayordomo, Elisabet Ametller, Mario Mancino, Xavier Gonzalez-Farre, Hege G. Russnes, Pablo Engel, Domiziana Costamagna, Pedro L. Fernandez, Pedro Gascón, and Vanessa Almendro

Precis: These findings reveal the operation of immunosuppressive mechanisms in the glioblastoma microenvironment driven by GM-CSF, a factor used in the clinic to elevate white blood cell counts in patients, suggesting clinical risks arising from its use.

6435 miR-153 Supports Colorectal Cancer Progression via Pleiotropic Effects That Enhance Invasion and Chemotherapeutic Resistance
Lei Zhang, Karen Pickard, Veronika Jenei, Marc D. Bullock, Amanda Bruce, Richard Mitter, Gavin Kelly, Chrisitos Paraskeva, John Strefford, John Primrose, Gareth J. Thomas, Graham Packham, and Alex H. Mirnezami

Precis: MicroRNAs that facilitate progression and mediate drug resistance in advanced cancers have increased appeal as treatment targets, given the more frequent lack of effective therapies at late stages of disease.
Mutationally Activated PIK3CA H1047R Cooperates with BRAF V600E to Promote Lung Cancer Progression
Christy L. Trejo, Shon Green, Victoria Marsh, Eric A. Collisson, Gioia Iezza, Wayne A. Phillips, and Martin McMahon

Précis: These findings deepen the in vivo evidence that MAPK and PI3K signaling cooperates in mediating the development and progression of KRAS-mutated lung cancer, suggesting combination therapies to treat this disease.

Antitumor Efficacy of a Monoclonal Antibody That Inhibits the Activity of Cancer-Associated Carbonic Anhydrase XII
Gabor Gondi, Josef Myśliwietz, Alžbeta Hulíková, Jian Ping Jên, Paweł Swietach, Elisabeth Kremmer, and Reinhard Zeidler

Précis: This study offers a preclinical proof-of-concept for immune targeting a cell surface carbonic anhydrase that is widely expressed in human cancer as a general therapeutic strategy.

THERAPEUTICS, TARGETS, AND CHEMICAL BIOLOGY

Photodynamic Therapy of Murine Mastocytoma Induces Specific Immune Responses against the Cancer/Testis Antigen P1A
Paweł Mroz, Fatma Vatansever, Angelika Muchowicz, and Michael R. Hamblin

Précis: Effective photodynamic therapy used to treat certain cancers may act as antigen-specific immunotherapy.

Bispecific Antibody to ErbB2 Overcomes Trastuzumab Resistance through Comprehensive Blockade of ErbB2 Heterodimerization
Bohua Li, Yanchun Meng, Lei Zheng, Yunmin Zhang, Qing Tong, Wenlong Tan, Shi Hu, Hui Li, Yang Chen, Jinxing Song, Ge Zhang, Lei Zhao, Dapeng Zhang, Sheng Hou, Weizhu Qian, and Yajun Guo

Précis: Using a bispecific antibody to block ErbB2/HER2 heterodimerization on the surface of breast cancer cells may provide a strategy to overcome resistance to Herceptin that remains a major clinical challenge in breast cancer patients.

A Small-Molecule Blocking Ribonucleotide Reductase Holoenzyme Formation Inhibits Cancer Cell Growth and Overcomes Drug Resistance

Précis: These findings address deficiencies in existing drugs that block ribonucleotide reductase, offering preclinical validation of a promising new class of inhibitors against this valid target that could find broad use to treat many human cancers.

Nitric Oxide Production Upregulates Wnt/β-Catenin Signaling by Inhibiting Dickkopf-1
Qiang Du, Xinglu Zhang, Quan Liu, Xianghong Zhang, Christian E. Bartels, and David A. Geller

Précis: In addressing the complex role of nitric oxide in cancer, this study furthers evidence of an oncogenic contribution that is mediated by a mechanism that stimulates Wnt/β-catenin signaling, a central pathway for carcinogenesis.

CORRECTION

Correction: Breast Tumor Kinase (Brk/PTK6) Is a Mediator of Hypoxia-Associated Breast Cancer Progression
miR-153 leads to increased invasiveness in colorectal cancer. Using mouse tumor xenografts, it was found that colorectal tumors with inhibition of miR-153 show a clean edge of tumor spheroid and fewer invasive fronts into the surrounding stroma (magnification, ×400) in contrast to controls with a more locally invasive tumor phenotype. For details, see article by Zhang and colleagues on page 6435.